I claim:

1. An electrical resistor, comprising:

a resistance zone;

connections;

electrically conductive power supply leads designed as busbars; and

an electrically insulating layer configured between said power supply leads;

said electrically insulating layer being a good thermal conductor;

said power supply leads connected to said connections;

said power supply leads running parallel to one another;

said power supply leads have ends remote from said resistance zone; and

said ends of said power supply leads being designed as connection contacts.

2. The electrical resistor according to claim 1, comprising:

another electrically insulating layer that is a good thermal conductor; and

a construction including said resistance zone and said power supply leads except for said connection contacts;

said other insulating layer surrounding said construction.

3. The electrical resistor according to claim 2, comprising:

a conductive layer that is a good electrical and thermal conductor;

said conductive layer surrounding said construction and said other insulating layer.

4. The electrical resistor according to claim 1, wherein said power supply leads are intermeshed in one another.

5. The electrical resistor according to claim 1, wherein said power supply leads are of coaxial design.

6. The electrical resistor according to claim 1, wherein said power supply leads are configured in a manner selected from

the group consisting of being stacked and being rolled up like a wound capacitor.

7. The electrical resistor according to claim 1, comprising:

a protective barrier made of a thermally nonconductive material;

said protective barrier configured between adjacent structural parts that produce heat or cold.